



COLONY OF SEYCHELLES

ANNUAL REPORT

OF THE

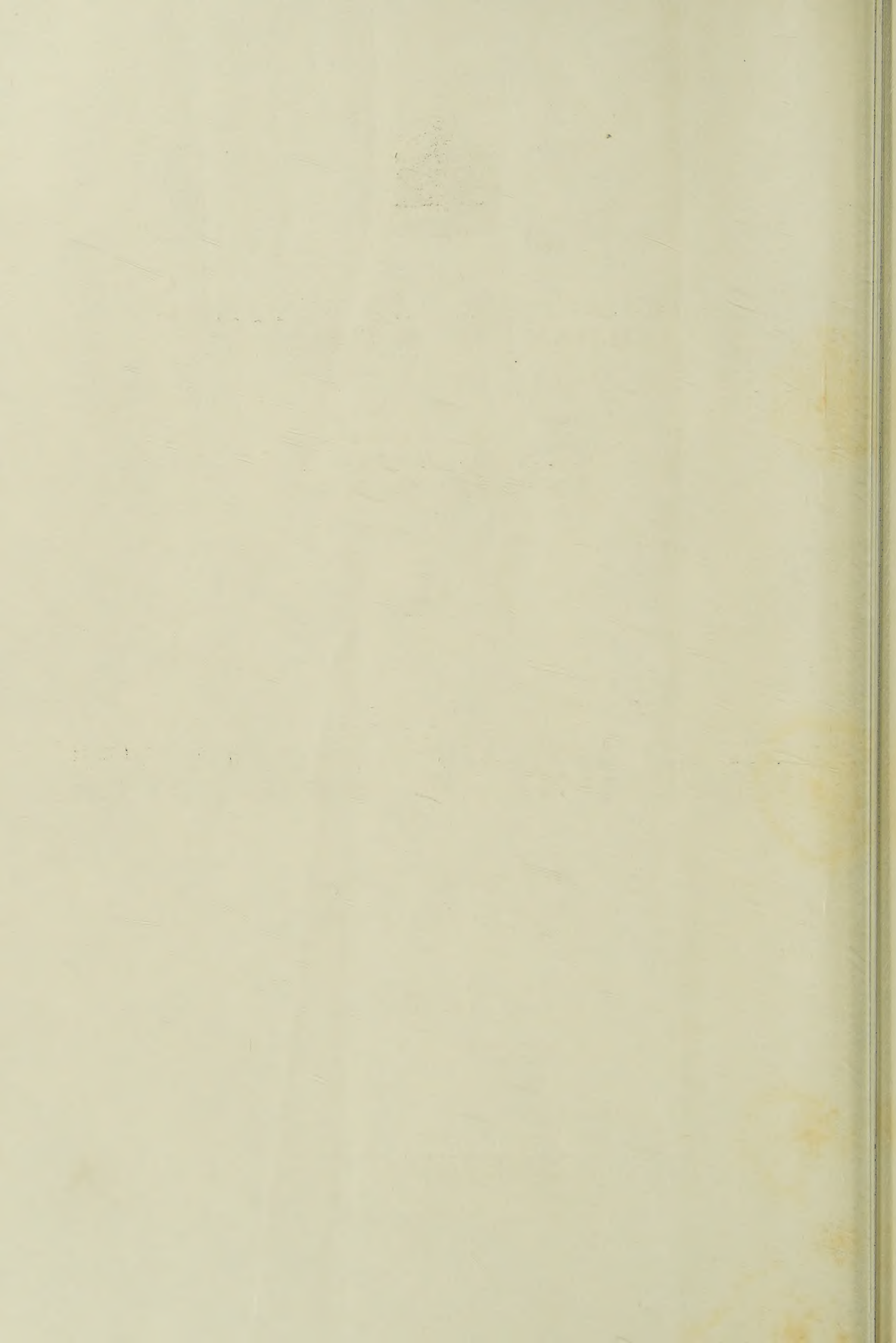
DEPARTMENT OF AGRICULTURE

FOR THE YEAR

1954

Printed by the Government Printer,
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Vol. 44, Part 1, 1914

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Annual Report of the Department of Agriculture for the Year, 1954.

Introduction

The Colony continued to enjoy good prices for its export crops, and apart from vanilla, which had an "off" year, yields were satisfactory.

Rice, sugar, wheat flour, and dried pulses are the major food imports, the latter being consumed in greater quantities on the rare occasions when fish is difficult to obtain. Apart from the trifling amounts consumed by the sophisticated section of the population neither fats nor animal proteins are imported.

A few acres of land and a pirogue could, in most parts of the Colony, yield all the fish, meat, starchy food, jaggery, fermented liquor, green vegetables, coffee, spices, cooking oil, fuel, and building material to keep a family well fed and well housed. It would be a retrograde step to advocate any general return to such subsistence-farming but it is increasingly evident that what was so aptly called the Seychelles "mixed forestry enterprise" by a former Director of Agriculture, and which is descriptive of most coconut estates in the Colony, will give place to mixed farming wherever conditions are marginal for coconuts if the land is to remain the chief support of an expanding population. Such farming will have to be largely on terraced land and tillage must almost certainly be by hand. One existing export crop, patchouli, fits well into such farming, and there are other possibilities.

The local market is strictly limited owing to the almost complete absence of industries. Measures which will reduce food imports and encourage local arable and livestock farming are the best insurance against the crippling effects on the smallholder of a slump in export-crop prices. The larger "mixed forestry enterprises" — and some are very large indeed — can weather a slump from the accumulated profits of the boom years, but the small man cannot and if his land is almost entirely planted with long-lived perennial export crops he will be hard pressed to feed his family.

There is scope for considerable further development of processing industries in the Colony, the high freight rates on bulky primary products being a severe handicap.

Policy

Policy may be summed up as the practise and encouragement of optimum long-term use of the land and its products, and of other natural resources, in the best interests of the population. In detail, this involves more than can be set out here but the following are major aspects :

1. The encouragement and betterment of coconut cultivation on all, or most, land to which the crop is still suited.
2. The encouragement and betterment of subsidiary export-crop cultivation.
3. The encouragement and betterment of food-crop cultivation on all or most holdings in order that cultivators may be saved from the worst effects of a slump in the value of export crops, and to reduce food importation.

4. The encouragement and betterment of local processing.
5. The establishment of forest reserves, their re-afforestation, and the obtaining of a sustained yield from them.
6. The up-grading of livestock and the encouragement of cattle, pig, and poultry keeping for increased fertility and profit.
7. Encouragement and active assistance in the rehabilitation of eroded land and other unproductive areas.

Progress Achieved in 1955

After a war and post-war period when direct Government operation of Crown Lands was judged to be the best solution to some of the special problems of the times, and might be made to further the above-stated policy, 1954 was a year for taking stock. It was decided that over-concentration on direct "operation" (involving an area which can only be estimated but which probably totalled over 10,000 acres) was interfering seriously with the furtherance of policy. A start was made with steps to divest the Department of many activities which were not an example to the community and which could be more suitably conducted by private enterprise. Simultaneously, an effort was made to stimulate a revival of those functions of a Department of Agriculture which cannot be performed by others. Solid progress was made with Crown Land re-afforestation, livestock up-grading, the conservation of future forest reserves, a planned campaign against Melittomma, the solution of pest-control problems, the dissemination of accurate information on agricultural topics and the work of the Department, the encouragement of soil conservation, the study of the economic of lease-hold smallholdings, and the encouragement of private food-crop production and animal husbandry by reducing Government production at uneconomic prices.

Weather

1954 was a year of low rainfall, dry conditions prevailing from June until December.

Rainfall and Air Temperature Victoria

1954 Month	Rainfall (inches)	Air Temperature (Fahrenheit)			
		Mean Max.	Mean Min.	Highest Max.	Lowest Min.
January	10.20	84	77	88	72
February	6.69	85	78	89	75
March	9.31	85	77	90	74
April	4.54	88	79	92	76
May	6.87	88	78	91	74
June	2.02	85	77	89	74
July	2.50	82	76	85	72
August	2.99	82	76	84	73
September	2.28	81	76	84	74
October	3.18	83	76	87	71
November	3.11	84	76	86	73
December	18.13	84	76	87	72
Total	71.82	—	—	—	—

Total Rainfall in 1954 at Recording Stations :

Mahe, Victoria	:	71.82 inches	(at Port Office)
„ Mont d'or	:	88.56 „	(1,300 ft. above the sea-level)
„ Grand Anse	:	88.46 „	(sea level)
Praslin	:	69.50 „	(sea level)
La Digue	:	67.04 „	(sea level)

SECTION I— AGRICULTURE, FISHERIES AND FORESTRY
IN THE COLONY**A. Crop Husbandry.****1. Coconuts.**

Actual exports of copra in 1954 totalled 5,883.105 metric tons, valued at Rs. 6,024,205 f. o. b. These figures include a carry-over of 160.227 tons (valued at Rs. 159,208) of the 1953 production, exported at the beginning of 1954. A large tonnage of the 1954 production (784.347 tons valued at Rs. 714,422) awaited export at the end of the year and was shipped early in 1955. The following table shows actual production for export during the last three years, with f. o. b. values. An unrecorded tonnage of copra is milled locally for edible oil and for soap-making.

<i>Year</i>	<i>Copra production for export (metric tons)</i>	<i>Value f.o.b. Rs</i>
1952	6,210	4,890,335
1953	6,054	6,025,730
1954	6,472	6,579,419

The Seychelles Copra Association, with a membership of 122 planters, and exporters, was founded in December 1953 for the main purpose of selling all copra presented for export and took over this function from the former Special Copra Committee. The Executive Committee of the Association called for tenders and sold a total of 6,500 tons of copra at prices ranging from £69.5.0 to £83.10.0 per tons f. o. b. the average price being £ 76.4.0 as compared with an average of £75.0.4½d. in 1953. The Association levied a cess of Rs. 2 per ton on all exported copra but its gross expenditure during the year was less than Rs. 1 per ton sold. Buyers were two local merchants, and all copra was consigned to India. The local selling price in Victoria ranged from Rs. 775 to Rs. 965 per ton. Copra Price Stabilization Fund cess at 6% on the f.o.b. value continued to be collected, the fund now standing at over Rs. 1¼ million. Export duty at 3% on the f.o.b. value of copra, coconuts, and oil, was levied.

The quality of the copra presented for export was, in general, very satisfactory. Further reference will be found in the Agricultural Chemist's report in Section II

Coconut plantations in Seychelles range from the occasional conventional line-planted pure stand at a density of some 60 trees to the acre, with a ground cover of grass, to variations of the typical local "mixed forestry enterprise" which may include (more or less at random) coconuts, self-sown cinnamon, timber trees, vanilla, patchouli, breadfruit and mango trees, and patches of rootcrops and pumpkins. Some of those planters with pure stands spent part of their revenue on manuring during 1954. The "mixed forestry enterprise" seldom receive any deliberate manuring apart from an occasional application of spent cinnamon leaves to make a patchouli bed. The sale of produce represents a drain on

fertility but something not far from the balance of a natural forest is achieved. So far as maximum production per acre is concerned the system is deplorable, but as a trouble-free way of life yielding a fair income when export prices are good the attraction of such a system, if it can be called such, cannot be denied. In the valleys and on those slopes where topsoil is retained by granite boulders the "mixed forestry enterprise" can, apparently, continue indefinitely without harm to the land. On the less fertile and more erodible slopes the "system" fails.

Melittomma insulare remained the major pest of coconuts, especially on Praslin. There were no further reports of inter-island spread but in view of the infestation detected on Curieuse in 1953, and its subsequent extension, the present uninfested state of La Digue and a number of other islands is probably only fortuitous. *Oryctes monoceros* continued to cause serious damage to young palms. There is evidence that the keeping of pigs on free-range has a controlling effect on "Boeuf Banane" (as *O. monoceros* is called locally) but where shifting cultivation of manioc is permitted, and gardens are unfenced, such a system of pig-keeping is impracticable. Rats continued to take their toll except where planters adopted a vigorous campaign of poisoning. A boring beetle (as yet unidentified) was found attacking coconuts and coco-de-mer in Praslin but its economic importance is as yet unassessed. Scale remained under biological control, though palms suffering from unsuitable environmental conditions had scale populations obviously higher than desirable. The work of the Department in connection with these and other pests, diseases, and vermin is referred to in Section III.

Local processing of coconut products was still on a very minor scale. Two coir factories operated during the year, but were unable to develop a sizeable export trade. The Government coconut oil expeller operated at well below capacity and close down at the end of the year. A number of small Indian-made mills, of the diesel-driven rotating motor type, were imported during the year and their simplicity, cheapness, and small power requirement make them eminently suitable. These mills are operated by small-scale millers supplying soap-makers and the local edible-oil market and unless a substantial export trade in oil or soap can be developed it seems unlikely that it will be either necessary or profitable for Government to re-start the the expeller. Some 18 tons of oil were exported toward- the end of the year (to Madagascar) and it is hoped that the initiative of private millers will result in an expansion of this trade or of soap exports. The Government expeller is available for purchase by private enterprise and could certainly operate profitably as a major source of oil for export if the volume of trade permitted it to work at nearer full capacity than in the past. Substantial oil export involves a supply of containers and no plant for the manufacture of these exists in the Colony, while the development of soap manufacture for the export trade is a technical and commercial problem which awaits solution.

The provision of seed-nuts from isolated plots of trees chosen for known sustained yield under typical plantation conditions would be a useful service and one which the Department hopes, eventually, to provide.

2. Cinnamon.

Cinnamon leaf oil found a ready market during the year and production remained at approximately the same high level which it attained in 1953. The local selling price ranged from Rs. 11.50 to Rs. 16.20 per kilo, compared with Rs. 9 to Rs. 12.50 in 1953.

The following table shows actual exports of leaf oil during the last three years :

<i>Year</i>	<i>Quantity (Kilogrammes)</i>	<i>f. o. b. Value (Rupees)</i>
1952	69,127	1,201,298
1953	99,296	1,045,989
1954	99,225	1,388,204

Cinnamon bark also sold well, at local prices ranging from Rs. 300 to Rs. 400 per ton, as was the case the previous year.

The following table shows actual exports of dried bark during the last three years :

<i>Year</i>	<i>Quantity (Metric Tons)</i>	<i>f. o. b. Value (Rupees)</i>
1952	143	61,327
1953	516	201,248
1954	475	217,433

On the whole, the standard of leaf oil and bark presented for export was satisfactory. Further reference will be found in Section II.

The cinnamon of Seychelles is self-sown, vigorous, tolerant of poor soils, and virtually free from pests and diseases but even such an accommodating plant as this suffers when lopped so frequently that bracken-fern and creeping grasses can choke the land. Recent good prices have tended to encourage such too-frequent lopping.

The Seychelles cinnamon industry, as it exists at present, depends largely on self-sown untended bushes, these often clothing steep and rocky slopes. When considering the advantages of plantation cinnamon (using chosen clones or strains) for quill and oil production it must be realised that part of the land now clothed with wild cinnamon could never be cultivated economically and safely and its replanting with recognised clones or strains is unlikely. Plantation cinnamon, if introduced, is likely, therefore, to replace only part of the total cinnamon acreage of the Colony — leaving a considerable area of nondescript untended cinnamon for the traditional leaf-oil and low-grade bark trade. Whether one or more of our existing types of cinnamon (or imported clones or strains) could with advantage be used for

- (a) clean-cultivated cinnamon for quills or
- (b) the replanting of areas for cropping in traditional style, remains to be seen.

It is evident that yields of leaf oil per ton of green leaf vary from place to place, but no work has been done on determining whether sustained improvement in oil yield per acre can be achieved by replanting with a selected clone or strain, nor has any work been done on plantation quill cinnamon. The long-debated question of the advantages and disadvantages of disposing of Seychelles Cinnamon leaf-oil through a sole agent was still under discussion. By the end of the year a Board was in process of formation (The Seychelles Cinnamon Leaf Oil Export Board) and when this Board is a functioning and representative body it is likely that its decision regarding the method of sale will be acceptable. Meanwhile sales are through a sole agent as in the past.

Cinnamon leaf pickers (mostly young females) are paid according to weight of leaf they deliver at a pre-arranged point. Rates vary according to distance and local availability of labour, and the keen demand for pickers resulted in some being able to earn Rs. 40 or even more, for a month's work. Other plantation work by women is usually paid for at around Rs. 11 per month, for a five hour "day", but such regular workers receive various benefits in additions to their wages.

3. *Patchouli*.

There was interest in this crop during the year, but no indications of "boom" conditions. Locally-distilled oil was not in demand and exports were almost entirely in the form of dry leaf. Samples of leaf were inspected prior to export and in certain cases distillation tests were undertaken, quality being generally satisfactory. The following table shows export of oil and dry leaf during the last three years :

Year.	Oil	f.o.b.	Value	Leaves.	f.o.b.	Value.
1952	2,718 kgs.	Rs.	187,318	40 tons	Rs.	73,971
1953	2,016 "		114,107	53 "		—
1954	273 "		18,514	67 "		270,666

The local price of dried patchouli leaf ranged around Rs. 3 per kilo. during the year.

It has been recommended that far-eastern strains of patchouli should be tried in Seychelles and with the regular calling of vessels from Singapore it should now be possible to introduce living material without much difficulty. The strictest attention to phytopathological control of such importations will, of course, be necessary.

4. *Vanilla*.

As anticipated, the 1954 crop was small, and owing to unfavourable weather the prospects for 1955 are no better. Unfortunately this period of low yields corresponds with one of high world prices.

Various combinations of unsuitable soil, bad drainage, excessive shade, over-crowding, lack of attention to the maintenance of fertility etc. were observed in the main growing area (Praslin). Some of these combinations resulted in damaging growths of lichen on the foliage and accentuated the symptoms which are usually attributed to soil-borne fungi.

The following table shows exports of vanilla "beans" during the last three years :

Year	Quantity	f.o.b.	Value
1952	5,927 kgs.	Rs.	79,550
1953	5,642 "		133,800
1954	1,370 "		62,000

The local selling price of cured "beans" was around Rs. 10 to 15 per 500 grms. at a time when similar beans were selling in London at around 57 to 71 shilling per lb. For a product having a high value-to-bulk ratio the discrepancy seemed higher than a reasonable profit warrants

5. Other Crops.

Apart from coconut and cinnamon products, patchouli, and vanilla the only other agricultural produce figuring in the 1954 export list was coco-de-mer nuts, of which 1,130 (valued at Rs. 1,895 f. o. b.) were exported.

An Annual Report is scarcely the place for a treatise on the variety and volume (or lack) of agricultural production in the Colony but as there are no market figures to give an indication of annual production for domestic uses, the following paragraphs are expanded beyond the strict limits of a report on the year.

(a) Beverage Crops.

Coffee, tea and cocoa grows in the Colony. Robusta, liberia, excelsa and even arabica coffee exist, but nearly always struggling unhappily against competition from other surface-rooters (especially mature coco-nuts). None of the damaging pests and diseases of coffee have been observed and there is every reason to believe that given reasonable conditions robusta (especially) will be a useful crop. This was demonstrated some years ago in the Botanical Gardens, where a good strain was used as a filler in a nutmeg plot. A sustained interest in coffee growing might be developed by encouraging its cultivation on leasehold smallholdings, backed by official buying and export. At present, production does not meet local demand.

An acre of tea of a good jhat was planted at about 1,500 ft. in a narrow fertile valley (on Crown Land) some years ago. There is no local production despite the undoubted suitability of many areas and the feasibility of hand manufacture.

Occasional cocoa trees occur throughout Mahe and Praslin's more favoured areas but the rather long dry spells which occur do not suit the crop. On the rare pieces of land where conditions are just right fair yields are obtained but the evidence is against development.

(b) Fibre Crops.

Kapok, Mauritius hemp, and even sisal and sansevieria will grow in the Colony. Sea-island cotton was tried at one time. Local conditions indicate that kenaf and ramie would thrive. Kapok from the few trees which occur is used locally to some extent, as are leaf-ribbons from coco-de-mer, raphia, pandanus, &c. Coir has been referred to under "Coconuts".

(c) Fruits.

The majority of tropical fruits can be grown, and already occur in the Colony. Mangoes, bananas, and pineapples flourish, the quality of the two latter being exceptionally good. Lime and Seville oranges do passably well but the majority of citrus yield fruit of poor quality.

Cosmopolites sordidus remained a minor pest of bananas. *Aleurocanthus woglumi* was severe on citrus in the Victoria area. Tomatoes are grown on the coastal sands as a wet-season crop on the drier islands and as a dry-season crop elsewhere. The strain is reputed to be the original "pomme d'amour" but variations occur from place to place according to what introduced seed has been grown. The plants are usually highly chlorotic on the coral sand and often suffer from root-knot eelworm, unidentified wilts, *Cladosporium fulvum* and virus troubles. In 1954 the Praslin tomato crop suffered severely from its usual complex of ailments as a result of unfavourable weather. Breadfruits form one of the staple foods and the trees appear to suffer from neither pests, diseases, nor crop failures.

(d) Grains.

A very small acreage of flint maize is grown on some of the coral islands. Shallow-water rice was cultivated in natural rains-fed depressions until some forty years ago and is said to have been abandoned owing to the introduction of the Cardinal bird (*Foudia madagascariensis*). Hill (unirrigated) rice and sorghums are reported to have been successful apart from bird damage but are not grown. On the granitic islands maize can certainly be grown, but is seldom seen. Maize for silage was successful in 1954.

(e) Essential oil Crops (other than Cinnamon and Patchouli)

Basil, eucalyptus, ginger-grass, lemon-grass, palmarosa, citronella, vetiver, yland-yland, and musk-mallow, are among the essential oil crops which have been tried at one time or another but there has been no sustained interest in any. During 1954 there was no demand for planting material, no signs of such demand developing, and no private plantings being maintained.

(f) Spices

Pepper, chillies, nutmegs, ginger, cloves and other spices can be grown, and small quantities are produced for local consumption. There has been some interest in pepper as a result of the high price of the imported article. Spice imports are too heavy, considering the ease with which the crops can be grown locally.

(g) Tobacco

A small proportion of the Colony's consumption of tobacco is met by local production of air-dried leaf, but interest in the crop flagged as a result of over-production in 1953.

(h) Papaya

Papaws grow and crop well and the fruit gives a good run of latex when tapped, but there has been no attempt to produce papain commercially. The market being notoriously unstable the Department is reluctant to do more than offer assistance to any intending grower.

(i) Vegetables

Manioc, sweet potatoes, pumpkins, eddoes, egg-plant, local spinaches, *Moringa pterygosperma* (locally: "Brede mouroungue") snake gourd, loofa, bitter gourd and cucumbers are widely and successfully grown. Apart from mosaic in manioc and occasional wilts of egg-plant little trouble is experienced. Yams would probably be more widely cultivated if not so susceptible to giant snails.

Climbing haricots, chinese cabbage, okra, yard-longbean, cho-cho, and squashes do well though chinese cabbage is particularly susceptible to caterpillar attack.

Among temperate-climate vegetables cabbages, radish, kohl-rabi, carrots, lettuce, Jerusalem artichoke, and beetroot can be grown with fair success, and others with more care, in the cooler months.

General Note on "Other Crops"

Coconuts dominate the Colony's economy and virtually all land which is unplanted with the crop is either eroded and somewhat infertile or so steep and rocky as to be fit for little else but forest or untended cinnamon. The felling of bearing coconut palms to give root-room to another crop is almost unthinkable and so 'other "crops" struggle unsuccessfully against a mat of sub-surface coconut roots, over-shaded and deprived of moisture. This is of course a generalisation and exceptions occur, but it is the main reason why promising alternative crops have made no headway. Outside the coconut zone soil conservation and improvement must coincide with, or precede, the establishment of new export crops and any considerable expansion of food production.

B. Animal Husbandry

1. Cattle.

In July 1954 a war-time regulation which was designed to prevent, or restrict, the slaughter of stock fit for breeding was repealed and the stock-owner again became entitled to dispose of his animals as he wished. In September (as a result of an increase in the price of milk from the Government dairy) there was a tendency for the price of privately-produced milk to increase but in the country districts (where Government milk is not sold) the increase was short-lived. Poonac was in adequate supply but fodder grass was scarce during the dry spell. The Stock Inspector reports that the cattle population shows signs of declining but no figures are available to confirm this. The general prosperity of the country was such that a rather high rate of slaughter was to be expected. The number of Sindhi X Friesian stock in private ownership increased. No epidemics occurred, but "horn" (or buffalo) fly was very prevalent and caused much concern.

2. Pigs.

The proportion of Large White blood continued to rise but many cottagers prefer the small black (inbred) pig despite its small litters. In addition to small size and heat-resistance an important reason is the ability of the local animal to put on fat on a poor diet. A strain of pigs stated to have originated from the French island of Glorieuse was seen on North Island, and these seemed to more nearly meet the needs of the small pig-keepers than the Large White. Similar good strains occur on other private islands. A kidney worm was reported by the World Health Organisation's Sanitarian to be prevalent in Mahé but no harmful effects could be clearly attributed to it. No epidemics occurred.

3. Poultry.

Poultry are almost invariably kept on open-range. It is argued that if penned they do not lay but doubtless it is more a matter of the amount of animal protein picked up on open-range than the actual liberty. Rhode Island Red crosses well with the local bare-neck fowl and the number of such crosses is increasing. Ducks, guinea fowls, turkeys, and a few geese are kept, the former doing particularly well. Fowlpox was unfortunately very prevalent during the year, the public's response to the Department's offer of free inoculation being a poor one. Coccidiosis, eye-worm, poisoning, infestation by parasites, and other troubles were much as usual, no reports of serious losses being received.

4. *Other Stock.*

A few goats, horses, donkeys, pigeons and rabbits are kept.

C. Fisheries and Sundry Products.

1. *Fish.*

It is customary for fishing from whalers to be on a share system, the owner of the boat (who may not go to sea) receiving a sizeable part of the proceeds of each trip. A development of this system during 1954 was that the owner of the Cold Store organised share-fishing with two motor-boats and three sailing boats, all catches being offered in the public fish-market and unsold fish being bought-in by the Cold Store at fixed rates below retail market price. There was, however, no sizeable development of fisheries. Only dry-salted shark finds a ready export market (in East Africa) and as fishing for shark alone is uneconomic and other salt fish has a limited sale in Seychelles there is little encouragement for vessels to fish beyond reach of the small local fresh-fish market. Some fish is lightly salted and smoked for home consumption but usually it is either consumed fresh or dry-salted in a primitive manner. A very small proportion of total landings passes through the Victoria Cold Store.

Tunny and "mackerel" are often available in large quantities and a small-scale cannery might be worthwhile.

Though no records are available it would seem that the per capita consumption of fish is remarkably high. Sufficient to provide a good meal for an average family is obtainable for a price corresponding to about one and a half hours wages for a stevedore or similar casual worker.

The Colony welcomed three expeditions interested in marine fauna. That of Prof. Smith of Pretoria University engaged in intensive collecting, and an interesting exhibition of specimens was arranged by the professor during his stay, a number of hitherto unrecorded fish being on view. Comm. Cousteau and also the Italian Zoological Expedition are believed to have laid satisfactory conditions for under-water photography and their other activities.

Several parties of game-fishermen visited the Colony and some excellent sport was had, though no unusually large fish were reported. Several sportsmen hooked sailfish, and a few were brought to gaff.

The following table shows exports of dry-salted fish (including shark) in recent years :

<i>Year</i>	<i>Export in metric tons.</i>	<i>Value in rupees.</i>
1952	194	131,435
1953	95	49,383
1954	86	65,190

2. *Turtles.*

The recorded export of calipee fell in 1954, due more to the method of marketing than any reduction in turtle catching. The sale price of green turtles in Mahe ranged up to over Rs. 100 for large females. Hawksbill turtles were scarcely worth catching at the current export price of tortoiseshell, but there is a small steady demand for shell, by local craftsmen.

The following table shows the recorded exports of turtle products during the year :

Calipee	448 kgs.	Rs. 5,952
Tortoiseshell	455 "	Rs. 4,290

3. *Sundry Produce*

Under this head are grouped most of the miscellaneous products of the Colony not classified elsewhere. These include bird guano, phosphatic rock, sea-birds and their eggs, sea shells, dried shark's fins, and beche-de-mer. Of these, bird guano and phosphatic rock remained by far the most valuable and although the "caves" of true guano are nearing exhaustion there is still a very large quantity of phosphatic coral, which is crushed and screened for export on several of the "eleveted reef" islands where it occurs. Extraction for export took place in 1954 but demand was not brisk. The export of sea-birds egg yolks ceased, but shell eggs and young Shearwaters were collected for the local market. Green sea snail and helmet shells (used by button and cameo makers respectively) were collected, chiefly by a Mombasa-based vessel operating in Aldabra waters. The exports of shark's fins increased, chiefly, as a result of better prices for dried shark.

The following table shows recorded exports during the year :

	Quantity	Value
Bird Guano and Phosphatic rock	11,864 tons	Rs. 413,062
Sharks fins	4,023 kgs.	16,057

Reliable figures for shell exports are not available. It is clear that sea snails abound off most of the islands and at current prices are profitable to both the divers and the exporters. The establishment of a button-making workshop is much to be desired.

According to exporters the market for beche-de-mer has been affected by cheap Japanese substitutes and there was negligible activity in 1954.

D. Forestry

Activity was principally by the Department (see Section II, para. 1.), but some planting of casuarinas by estates was observed. The coconut zone of the granitic island contains a surprisingly large number of timber trees, but on the upper slopes and hilltops of the average private estate the cover ranges from scrub (or a blanket of fern or *panicum parvifolium*) to either a good stand of cinnamon or large self-sown *Albizzia*. Apart from the cinnamon and *Albizzia* this type of cover is of little monetary value, but except where fires have been most devastating (as on parts of Praslin and Curieuse) it does at least prevent serious erosion. Fern and *Panicum parvifolium* ("Gazontraille") are quite remarkable in this respect.

SECTION II — THE WORK OF THE DEPARTMENT

1. The Work of the Forester

General

Due to the Forester (Mr. E. F. Brewer) being on home leave for seven months the target acreage for new planting was set at the low figure of 200 acres. To the credit of the Senior Forest Ranger and his subordinates the figure was exceeded by the satisfactory margin of 28 acres, bringing the total area re-afforested since the inception of the scheme to 1,504.

An important aspect of the work of the Division in 1954 was the increase of density in low fertility areas by inter-planting and sowing, while weed control, mainly concerned with "Gazontraille", was a major activity as usual.

The abnormally prolonged dry spell checked growth on exposed ridges and was particularly damaging to the youngest plantings and direct-sowings but on all except the worst sites established plantings progressed by an increase in density,

Though 75 acres of indigenous scrub forest on Crown Land were destroyed by fire no re-afforested areas were, happily, involved.

A Forest Reserves Ordinance, projected in 1953, was in the hands of the legal draftsmen in 1954 but its presentation as a Bill was delayed until 1955.

Silviculture.

Except as stated in the preceding paragraph general progress was good and the December rains brought about a rapid change in the appearance and vigour of those areas which had been checked by the long dry spell. In recently formed plantations there were instances of 90% establishment being reduced to 50% and, in recent direct sowings, of an initial germination of 90% being reduced to a 40% stand, an unavoidable consequence of the adverse weather.

As a result of observations of "close planting" plots on poor and exposed sites, where 3 ft. x 3 ft. and 4 ft. x 4 ft. spacing was tested as a means of achieving a rapid soil cover, it was decided to "thicken" existing low-density plantings on such sites by direct sowing. The points in favour of such system appear to be as follows :

- (a) Canopy formation (much to be desired) is likely to be earlier than in low-density plantings.
- (b) A species more suitable than that originally planted can be established cheaply.
- (c) The nurse-effect of the original planting is clearly beneficial and inter-sown species are likely to equal the height of the original stocking in a year or two.
- (d) The "thickening" of the plantation is expected to stimulate general height growth and favourably affect stem formation.
- (e) Earlier soil-shading will result in greatly reduced weeding cost, as the shade-tolerant weeds (and climbing weeds) in the Colony are much less important than the non-shade-tolerant "Gazontraille".

Needless to say, such high-density stands will be restricted to poor and exposed sites which are unlikely to respond to the normal methods.

Following promising results with direct-sowing trials it was decided, when the 75 acre fire occurred at "Dans Jamalac" in February, to attempt immediate direct sowing of the whole area. Fortune favoured the work, as two days of heavy rain cooled and saturated the land immediately the fire was extinguished. On the third day the entire labour force at Sans Souci was directed to the area. *Sandoricum indicum* (Santol) was largely used, as results under varied conditions with this species have been excellent and fresh seed was plentiful. By the end of March the work was completed, holes at 4 ft. spacing being dug through the surface mat of half-burnt fern roots to the soil beneath. By the end of the year establishment averaged 85% and vigour left nothing to be desired — many specimens topping 3 ft. The effect was equal

to that which might have been obtained by planting first-grade seedlings, despite the prolonged dry spell already referred to. This burnt site appears to have been particularly favourable owing to a mulching effect by fern roots. There was complete freedom from weed competition and doubtless the ash had a manurial effect. Though the remarkable success of this particular plot may be due, in part, to the special circumstances mentioned it is clear that prompt direct-sowing may often be the cheapest and most effective treatment for burnt areas, and may save them from the serious erosion and long-persisting sterility which has caused so many bare red hills in the Colony.

The rates of growth of many of the introduced species continue to maintain their early promise of success. Some specimens of *Melia dubia* planted in late 1952 now exceed 40 ft. in height, and *Cedrella odorata* and *C. mexicana* on favourable sites closely approach 30 ft. The mahoganies (*Swietenia mahoganii* and *S. macrophylla*) have maintained steady growth and show no signs of check, indeed *S. macrophylla*, over a wide area, is now becoming markedly more vigorous and several specimens measure approximately 16 ft. in height, with proportionate girth.

In addition to the notable introductions just mentioned the following are brief comments on others of interest:

Cryptomeria japonica: Though of considerably slower growth than most introductions there are a few specimens exceeding 12 ft. and carrying a very healthy foliage. In general, the plantings have made steady progress.

Ochroma lagopus (Balsa): Has shown good growth and the best specimens top 18 ft., but unfortunately the species is regularly attacked by a leaf-roller pest which practically defoliates it, and it is likely that the quality of the timber may be affected by the check which presumably occurs.

Aerocarpus fraxinifolius: Though not generally showing the spectacular growth of *Melia* and *Cedrella* this species progresses steadily on favourable sites, an occasional specimen showing fairly rapid growth and the best being 16 to 18 ft. and well proportioned.

Tectona grandis (Teak): Height growth is good but crown which is now carried is rather poor compared with the healthy appearance during the first two years of growth.

Chukrenia tabularis: Continues to give satisfactory growth on the better sites but does not appear to be as widely accommodating as previously thought.

Pinus merkussii: Seeds received from Indonesia germinated quite well but the seedlings made little progress, probably due to lack of mycorrhiza. By the close of the year all but a few had died and the remainder seem unlikely to survive.

Newcome Forest, Praslin.

The forest remained on a care and maintenance basis. It is sited in a hilltop basin which is the source of streams flowing to both sides of the island, conditions varying from eroded slopes to sluggishly drained marsh. It serves several useful functions, being a trial of methods and species under typical Praslin conditions, a future stabiliser of stream-flows, a "nucleus" which, it is thought, will have some local effect on climate and aid re-afforestation of the adjoining barren eroded slopes, and last but by no means least it forms a demonstration to private estate-owners.

It is heartening to report that this forest is now giving result far beyond expectations, there being a marked improvement in vigour throughout and evidence that a complete soil cover is likely to be obtained within a year or two. A small plot of *Swietenia mahoganii*,

mentioned in earlier reports, continues to do well and now contains some of the Colony's best young specimens. Labour shortage continued to be a problem, and whenever it is decided to resume planting workers may have to be brought from Mahé, as existing labour is sometimes insufficient to keep up with weeding.

The barren eroded ridges of Praslin present a very special problem in re-forestation and apart from the "nucleus" system represented by the Newcome plantings there is need for other trials. Direct-sowing of *Chrysobalanus icaco* (coco-plum) was attempted in 1951, but germination of scattered seed was poor and a new attempt is planned in which "colonisation pits" will be employed.

A very encouraging aspect of work in Praslin is that some of the local landowners are taking more interest in re-forestation and the techniques employed.

Vallée-de-Mai, Praslin.

The Department has stood by its policy of restoring this unique area of Crown Land to, as far as can be ascertained, the condition in which it was found when man first set foot in the Colony. This involves the removal of both self-sown and introduced exotics from the main area, and replanting with the coco-de-mer and other palms and pandanus which give the valley its unique character.

Over 3,000 coco-de-mer have been planted during the last three years, and germination of these and of the sowings of other endemics has been very satisfactory. Apart from an annual planting of about 10% of fallen coco-de-mer fruits and the removal of the few remaining exotics, the forest itself will require little further work, but fire precautions and the maintenance of footpaths must of course continue.

Above the forest is a foot-path which affords one of the best views of the valley and as a contrast and amenity it is planned to plant a belt of ornamental exotic trees on the slope above the path. This work will involve only trifling expenditure and can be done by maintenance staff as time permits.

The population of Praslin have an affection (not unmingled with awe) for the Vallée-de-Mai, and it is also one of the Colony's modest claims to fame. Unlike the coconut, the coco-de-mer normally grows vertically to an immense height and bears a huge crown of almost undivided leaves which cast a dense shade. The pandanus (of which several species occur) protrude their stilt-roots in the gloom below amid the rustle and creak of the great palm leaves. The general effect is very remarkable quite apart from the botanical interest, and it will be understood how important it is to this small Colony to preserve such a unique attraction.

Work on an 80 ft. fire-ride was completed during the year, this now encircling the valley and a large part of surrounding Crown Land.

Fire.

The only Crown Land fire of 1954 occurred unusually early (February 28th.) in the "Dans Jamalac" area of scrub forest, destroying 75 acres before being controlled and extinguished. In view of the dry weather which prevailed later in the year the absence of other outbreaks was fortunate.

The "Dans Jamalac" fire was probably caused by a negligent collector of wild honey. The terrain was steep, rugged, difficult of access, and carried a heavy growth of highly inflammable fern and wild palm, the latter burning with explosive violence. The only favourable circumstances were a stream on one flank and a slight wind blowing contrary to the up-hill advance of the fire.

There was a good turn-out of labour from neighbouring Crown estates, reinforced by recruits from Victoria and a night patrol of prisoners. The fire-fighting organisation proved vastly superior to that during previous outbreaks, thanks to the whole-hearted co-operation of the Police and the Hon. Secretary to Government, whose efforts resulted in limiting what might have been a very serious fire.

A frontal fire-ride was cut and the knapsack sprayers previously purchased by the Division were brought into use. Control was as planned and no subsidiary outbreaks occurred. There was no damage to planted areas and, as previously mentioned, prompt direct sowing of the burnt area has been most successful.

Summary of Forest Produce 1954.

<i>Timber.</i>							
<i>Species.</i>	<i>Planks.</i>	<i>Madriers.</i>	<i>Beams.</i>	<i>Posts.</i>	<i>Poles.</i>	<i>Rafters.</i>	
r. ft.							
Albizzia	21,355	29,228					
Santol		541	33				
Takamaka		2,058					
Cedar	472			4,341	3,173	1,279	
Calice-du-Pape	854	716					
Bois Rouge				3,828			
Bois Noir	295	708					
Bois de Natte	737	169		55			
Capucin		35		3,367			
Mahogany	632	290					
Sandragon	37		74				
Agati	3,148						
Breadfruit	437						
Fruit de Cythere	280						
Eucalyptus	1,110						
Total	29,357	33,745	107	11,591	3,173	1,279	

Other Produce.

Cordwood	:	562½ cords.
Cinnamon Bark	:	57,333 kilos.
Cinnamon Leaves	:	228,567 kilos.
Latanier Leaves	:	41,844 units.
Capucin Charcoal	:	1,321 tins.
Ordinary Charcoal	:	1,323 tins.

Planting and Species Distribution Record for 1954.

<i>Species</i>	<i>Sans Souci</i>	<i>Le Nicol</i>	<i>Grand'Anse.</i>
Sandoricum indicum	75	30	47
Callophyllum inophyllum		27	8
Pterocarpus indicus		37	1½
Adenanthera pavonina		1	
Tecoma leucoxydon	1		1
Artocarpus communis			2
Pruneau (Eugenia species)			2
Jambon (Eugenia species)			2½
Melia dubia			2½
Casuarina equisetifolia	1		
Grevillea robusta	1		
Terminalia catappa			1

Total :— 228.

2. Veterinary Work and Livestock.

As formerly, the Stock Inspector (Mr. Donald Morgan) was responsible for Veterinary work, and also supervised livestock on Grand'Anse Estates and unleased Crown Lands. During part of the year he also acted as Manager of Union Vale Estate.

Veterinary and Quarantine Work

There being no private veterinary in the Colony the Stock Inspector remained the only person capable of any but the simpler treatment of sick animals. Though without professional qualifications the Stock Inspector was called upon, and able, to do virtually the same work as a veterinary surgeon. He operated the Department's animal clinic and visited sick animals on request. Nominal fees were charged and free treatment was given where owners could show their inability to pay.

In addition to minor dressings and the supply of medicines, insecticides, and certain veterinary sundries the Stock Inspector performed the following in 1954.

Clinical examinations	711
Burdizzo castrations	551
Open-method castrations	128
Ovariectomy (bitches)	6
Minor operations	17
Fowlpox vaccinations	330
Smears	45
Faecal examinations	13

Preventive and control measures were explained to stockowners whenever there was opportunity, and the work of the Stock Inspector was obviously much appreciated.

The quarantine stations on Hodoul and Long islands were maintained and inspected, the following animals being quarantined on arrival from overseas for periods laid down by law: 60 pigeons; 6 sheep; 2 geese; 3 parrots; 1 dog; 1 canary.

Several importers of livestock sought permission to have their animals "quarantined" other than in the prescribed place, the amount of official time wasted in dealing with these requests being most regrettable. Reasons for objecting to the prescribed place (or the prescribed period) were numerous, each had to be heard, and none were considered valid. As far as it is known all livestock left quarantine in as good, or better, health, and condition than on entering. It cannot be emphasized too often that those intending to bring animals into the Colony should enquire from the Department what documentation and quarantine will be required and then either abide by the requirement or refrain from their intention.

Certification was provided in connection with the export of two land-tortoises and one cat.

Animal Husbandry

Cattle By the year's end the Government and Grand'Anse Estate herds totalled 268 head, 26 less than in 1953.

Culling was directed at eliminating all beasts not

- (a) High-yielding milch cows
- (b) Bulls with a good record
- (c) Promising young stock suitable and needed for the dairy or for up-grading private stock
- (d) Imported Sindhi and Friesian stock
- (e) Young oxen suitable and needed for training for draught work.

This involved the sale of sundry cows of indeterminate ancestry, nearly all bull calves, a number of local bulls, local-born pure Friesians, and a proportion of a year's total of Sindhi X Friesian heifer calves. The eventual concentration of cattle at Grand'Anse and Union Vale estates was aimed at and a start was made with moving cattle from St. Anne and Anse Boileau.

Sindhi X Friesian animals continued to show great promise. When well cared for, and virtually stall fed, pure Friesians do well enough but it is clear that their main purpose in the Colony is for crossing. Sindhis do well but unfortunately the Grand'Anse herd has suffered much from mastitis in the past and many have blind quarters. The breed is too low in milk yield to warrant keeping pure stock other than for crossing. With careful selection over a period of years it may be possible to build up a herd derived from Sindhi X Friesian crosses which can be the permanent source of young stock and of stud bulls, and a few young crossbred bulls are being retained with this aim in view. The unpopularity of both Sindhi and Friesian pure-bred bulls as stud animals for public use is relevant to these plans.

At Union Vale the existing system of stall-feeding elephant grass (and silage), supplemented by poonac and maize meal, was satisfactory, though the attempt to produce a large gallonage of milk had strained the capacity of the estate to provide sufficient fodder. Several steps were taken to remedy the situation, including raising the detail price of milk increasing the acreage under elephant grass, cutting out some of the cinnamon which had limited the meagre grazing, and introducing the practise of ensilaging elephant grass. An additional silo is planned. The felling of all coconuts and the contour planting of more land to elephant grass is desirable, but in view of the present high price of copra this must be postponed.

At Grand'Anse elephant grass planting was on a large scale, with a view to making the coastal section of the estate self-supporting. The feeding of sugar-cane tops was stepped-up, and an eight-acre field (hitherto used partly for vegetables) was employed as a home paddock for the herd. Manure-stacking arrangements were improved and the feeding of mineral supplement from lick boxes, instead of in bran or mixed with fodder-grass, was introduced. It being planned to accomodate all weaned young stock at Grand'Anse, in addition to the Sindhi herd, two new calf pens (of ant-proof wood and strained wire, with a covered area for shade) were started at the top of a terraced area completely planted, in advance, with elephant grass. The stationing of Mr. Serge Savy, our new Agricultural Officer, at Grand'Anse gave a great impetus to livestock work. Although herding continues at Grand'Anse this is likely to be more and more restricted and eventually an hour or two in the paddock and tethering in mature coconuts is likely to be the grazing method.

At Anse Boileau stocking was reduced and the aim (with virtually the whole estate ear-marked for leasehold small holdings is merely to carry enough to provide manure for the market garden while this still continues, and eventually reduce to a stud bull only. The dip will serve the smallholders. Manure-stacking was improved.

At Foret Noire manure-stacking was improved and some culling was done. Here again the aim is to remove all stock except a stud animal as soon as the market garden work is taken over by smallholders.

Souvenir remained useful as a hill-station for Friesian and other cattle thought likely to benefit from a period there. It will remain as a sub-station of Union Vale.

The keeping of cattle on St. Anne was in course of abandonment during the year. Results had been consistently unsatisfactory and as plans for the leasing of the island had been approved the cattle were accommodated on other Estates, where they all showed a prompt improvement in condition. The dip and byres on the island can certainly be put to good use by a tenant.

Cattle on Curieuse were reduced to the number required for the copra mill and for the Manager's milk supply. Stalled animals are kept by the Leper Settlement on the same island, for their milk supply. In view of the isolation of the island and its highly eroded condition cattle-raising is inadvisable.

Losses during the year were confined to bloat, pneumonia, accidental deaths, and septic conditions after calving. All, unfortunately, could be classed as avoidable — having their origin in faulty management. A supply of one of the newer remedies for bloat was obtained and it is hoped that the use of this, combined with prompt observation, will reduce trouble in future. Buffalo-fly ("horn fly") was prevalent except at Union Vale and a dressing containing gammexane was used with fair success, but a solution to the problem is more likely to be found in the use of toxaphene-containing dips and toxaphene-diesel-oil back-rubbers, funds for the purchase of the material being sought during the year. The cleaning-up of manure yards helped somewhat, as did the covering of manure heaps and the use of repellents on stock. An uncontrollable breeding ground occurs in calpens, unless these are concreted as are the byres.

All Government cattle were tuberculin-tested during the latter part of the year. The only positive reactors were four pure-bred Friesians (imported some years ago) and after consultation with a visiting Veterinary Officer and the Medical Department it was decided to slaughter.

The repair, upkeep, and proper use of mechanical equipment is a very serious problem in Seychelles, the small size of the Colony, poor communications and other factors, being responsible. A scheme for the pasteurisation of Union Vale milk was approved some years ago, and a single set of equipment was obtained. A start had been made with installation in 1953, but after careful consideration and consultation with the Medical Department it was decided to stop work on the installation. From experience here, and in other Colonies, it was decided that periodical breakdowns in pasteurisation would inevitably occur — and it was considered that any such breakdowns (lacking a stand-by installation) would result in a situation far more dangerous to public health than if consumers were accustomed to relying on boiling. The equipment is under care and maintenance, but disposal of it seems the only solution. There is no public demand for pasteurisation, and no likelihood of private producers being stimulated to pasteurise by Government example.

The stock position at the year's end was as follows : —

Union Vale Dairy.

	<i>Bulls.</i>	<i>Cows.</i>	<i>Heifers and Heifer calves</i>	<i>Bull calves</i>	<i>Total</i>
Friesian	2	66	1	1	70
Sindhi	2	—	—	—	2
FriesianXSindhi	—	20	31	12	63
Local	—	6	—	—	6
	4	92	32	13	141

Other Estates

Total 155 (including stud bulls)

Curieuse Island

Total 2

At Stuck on Private Estates

Total 2 (1 Friesian, 1 Sindhi)

25 heifer calves were selected for replacements at Union Vale out of a total of 85 births. 20 heifer calves were auctioned for rearing, 56 head of cattle were auctioned for slaughter, and 15 week-old surplus bull-calves were supplied to the Hospital (without charges) for slaughter. Adherence to the auction system proved entirely satisfactory. The supply of unweaned bull-calves for Hospital diet was a new departure, preferable to the previous system of slaughter and burial. The economics of rearing bull-calves for beef will be further tested but present indications are that it does not pay.

A total of 232,447 pints of milk were produced at Union Vale from an average of 69 cows in milk, giving an average annual production per animal of 3,368 pints. 29,139 pints were fed to young stock and the remainder (203,308 pints) supplied to Government institutions and sold to the public. The price charged up to September 1st. was 25 c. per pint and 40 c. per pint thereafter (cooled, bottled, capped, and delivered).

The highest yields for animals completing lactation during the year were :

		<i>Lactation.</i>
Friesian ("Favorite")	5,701 pints	400 days.
Friesian X Sindhi ("Ada")	4,101 pints	406 days.

From these and other records it is abundantly clear that the hardy and handy Friesian X Sindhi animals are, for local conditions and by local standards, sufficiently high yielders.

Pigs.

A policy of maintaining a small supply of young breeding stock for sale to the public by auction proved satisfactory. Pig-keeping was restricted during the latter part of the year to Union Vale and Anse Boileau. Union Vale has the advantage of expert supervision proximity to Victoria (which is the Colony's market town) supplies of poonac, unsold manioc &c. from the market, and occasional surplus milk or skim. The immediate improvement in condition of pigs transferred to Union Vale was remarkable. Pig-keeping at Anse Boileau showed no improvement and plans were made to discontinue. Seven breeding sows were in use at the year's end. Sales to the public during the year totalled 103. The average litter was just over seven. Large White and a good type of local pig were kept.

Deaths from sun-stroke, accident, and poisoning due to accidental access to salt occurred during the year at St. Anne, prior to the closing down of pig-keeping there. All were, regrettably, avoidable.

Poultry.

Poultry keeping was confined to well-culled pens of R. I. R. and "Gallega" (bare-neck) birds at Union Vale, for the supply of hatching eggs, pullets, and cockerels to the public, and of fresh eggs to Government Institutions. The flock totalled 76 at the year's end, egg-production having totalled 251 doz. 93 pullets and cockerels were auctioned to the public and 14 doz. hatching eggs were sold at a fixed price. 223 doz. eggs were supplied to Government Institutions and 21 doz. incubated.

3. The Works of the Agricultural Chemist

The Agricultural Chemist (Mr. J. F. G. Lionnet) was responsible for the inspection of produce prior to export, laboratory work in connection with this and other duty, trials of imported insect parasites and other work in connection with pest and disease control, the operation of the Central Distillery and the Central Coconut Oil Expeller, and inspection and certification in connection with the import and export of plants and plants parts. Matters concerning pests and diseases are referred to in Section II, (4) and reports on the Distillery and Expeller in II, (7), (8).

(a) *Laboratory*

Produce for export, fermented liquors, and miscellaneous samples totalled 753, as compared with 749 and 765 in 1952 and 1953 respectively. The control of cinnamon leaf oil quality continued to provide most of the work, 446 samples being examined. The following table records the result of examinations of fermented liquors in recent years. These samples are the result of seizures by the police and may consist of fermented sugar-cane juice, fermented coconut toddy, or liquors locally known as "La Puree" which may be fermented from a variety of substances (including sugar, European potatoes, and various local roots and fruits, with or without cane-juice or toddy). There are special provisions in the law concerning "La Pures", which is often stronger than toddy ("Calou") or fermented cane-juice ("Bacca"), and may be harmful to the consumer.

	1950	1951	1952	1953	1954
No. of samples of fermented liquor:	197	151	222	253	275
Percentage of samples found to be "La Puree":	35.9	30.0	26.5	16.1	22.5

(b) *Inspection*

The Produce Inspector at the Customs Sheds was, as previously, responsible for the sampling and inspection of copra, cinnamon bark, salt fish, and dry patchouli leaves.

In general, the quality of copra deposited for export was very satisfactory. Among the faults observed, however, were: insufficient drying, drying at too high a temperature, the effect of decay between shelling and drying, the effect of decay due to rough treatment and delay between husking and shelling, and (especially as regards copra from distant islands) the effect of bad storage in transit to the Sheds. Many estates turn out consistently good copra, but others must lose considerable sum of money from loss in weight due to decay. Some 50 lots, after examination with

Assessors, were declared sub-standard and rejected. Much of the rejected copra is resorted and re-submitted but it is of interest that the local selling price of sub-standard copra was often the same as that for export grade, much sub-standard copra having a higher percentage oil-content and therefore yielding well when milled.

Due to the sustained interest in Seychelles cinnamon bark the Produce Inspector devoted much of his time to its examination. The produce was very variable, ranging from thick bark obtained from 10-15 year old wood to thin 3-5 year old produce. Some samples were abnormally dark, probably due to prolonged sun drying. No Ceylon-style quills were submitted. Faults looked for were improper drying, adulteration, and excess wood and dust. In general, samples were up to the standard expected by overseas buyers.

In the course of plant import inspection work several instances came to light of living plant material having entered the Colony without having been declared or held for inspection and verification of overseas certification, but owing to either the circumstances of the case or lack of proof prosecutions could not follow. Despite many pests and diseases Seychelles is still free from a large number of very serious ones, and could remain so if the public would desist from attempts to evade the Regulations.

As in previous years advice was given to producers and planters whenever requested.

4. Work on Pests, Diseases, and Vermin.

Some reference has been made to prevalent pests, diseases and vermin in Section I. Apart from those referred to there and below, pests, diseases and vermin were either of very minor importance (such as diseases and pests of ornamentals, or the complex of troubles so frequent when plants are grown in an unsuitable environment) or have presented, so far, no practicable and economic line of attack. Among the latter are termites, timber borers, forest-tree pests, the internal parasites of privately-owned livestock, the chlorosis of crops grown on coastal sands, eel-worm, soil-borne wilts, and birds damaging to crops and green turtles.

It has been observed that apart from obvious exceptions (which it is hoped can be dealt with) there is a rather remarkable balance in the insect life of Seychelles. Predatory insects, and doubtless other factors, seem to be effective in preventing lasting infestations of many damaging species. The population of mason-wasps and dragon flies, for example, appears to be enormous.

Melittomma insulare.

The Praslin Pilot Scheme's inception was dealt with in the 1953 Report. From the commencement in September 1953 until December 25th 1954 a total of 11,362 coconut palms were examined and of these 8,750 were treated with paradichlorobenzene, 622 were felled as unsuitable for treatment, and 1,982 were rated as free from infestation. In addition to overall supervision this involved 1,067 man-days by skilled workers and 12,652 man-hours by unskilled labour. Except for occasional instances where very small holdings were unable (or unwilling) to supply unskilled labour, expenditure from Scheme funds was solely on skilled labour ("Melittomma Assistants"), an Agricultural Assistant (Mr. J. Dookley), and paradichlorobenzene, tools, tar &c.

With an estimated 200,000 coconuts to be inspected in Praslin, and a rate of progress of some 3,000 trees per annum per skilled worker, authority was sought to increase the staff from 4 to 16. Eventually authority was obtained to increase (with effect from January 1st. 1955) to eight.

The use of "permanent" rather than "temporary" seals throughout was decided upon, though the pros and cons of both are arguable. Re-inspections revealed no evidence of ineffective treatments, or, as yet, of more than very occasional re-infestation. Treated trees were noticeably stimulated as regards both leaf-growth and nut setting, these effects doing much towards getting the Scheme a favourable reception amongst planters.

The Praslin Scheme is only partly a "Pilot" scheme — it is also a planned campaign to effect a drastic reduction in *Melittomma* infestation in the second-largest infested island, paid for by the tax-payers of all islands. The magnitude of losses in Praslin, rather than any other factor, resulted in the choice of that island. To apply to Mahe the Praslin method of 100% inspection of trees (and treatment where necessary) by Government-paid staff working on converging fronts cannot be contemplated with confidence until the true results of the Praslin Scheme are known—which may not be for a number of years if a proper assessment of post-treatment re-infestation is to be made. To apply the free-treatment system to Mahe is certainly not contemplated. Meanwhile, *Melittomma* continues to damage many of the trees of Mahe and it was decided to make available to planters the services of an Instructor, and supplies of paradichlorobenzene at landed cost plus handling charges. The provision of such facilities ignores the possibility (assumed in the case of the Praslin Scheme) that only by progress on "fronts" can worth-while results be achieved, but the beetle being (according to Brown) a weak flyer, and the distribution in the Colony indicating that spread is not rapid, such interim action was considered justified.

The free treatment provided in Praslin under the so-called "Pilot Scheme" encourages some Mahe planters to wait and see if they, also, will get free treatment. Funds were obtained for the provision of a travelling Instructor in 1955 and it is hoped that as progressive planters carry out treatment their neighbours will be encouraged to do likewise, rather than wait for the free treatment which, as far as can be judged at this stage, will never be given. Consideration was given to levying a cess on Praslin copra to relieve the general tax-payer of the burden of paying for pest-control under the "Praslin Pilot Scheme" but the Agricultural Board postponed recommendations until other sources of funds were explored.

Mr. E. S. Brown's practical measures are, therefore, being used on a scale commensurate with the fact that we are as yet unaware of the long-term economic of the very effective fumigation method he devised. With the rapid development of new insecticides and the possibility of biological control it must always be hoped that a control-method which does not involve ax-work on the trees will present itself.

The Department was in correspondence with Mr. E. S. Brown and the Commonwealth Institute of Biological Control during the year. It is hoped that a predator now being bred in England may be of use, but nothing definite is known as yet.

Oryctes monoceros.

This pest continues to cause the death of many newly planted coconuts, and the occasional rapid death of a flourishing mature palm due to decay of the bud is almost certainly initiated by its attacks. No action at all is taken by the majority of planters to limit breeding sites, among which fallen palms and spent cinnamon leaf are the most notable.

Scolia ruficornis was introduced in 1949, 1950 and 1951, imported wasps being released on Mahe and La Digue and a pair bred by our Agricultural Chemist was released on North Island. This year wasps were recovered from North Island, there having been no indication of successful establishment elsewhere, due, it may be, to the imported insects being too old to parasitize *Oryctes* larvae in the field. North Island was visited and a score or so of the wasps were seen. So far there is no evidence of control by *Scolia* but there is undoubtedly a probability that it will occur.

Two consignments of the predacious elaterid *Pyrophorus pellucerus* were received by air and sea from the Commonwealth Institute of Biological Control, the insects arriving in good condition. They were liberated on Mahe, Praslin and La Digue, no observation or recovery being reported so far.

Cosmopolites sordidus :

Further consignments of *Lienota* beetles were received from the Commonwealth Institute of Biological Control, and releases were on Praslin and La Digue. No recoveries have been effected but there are unconfirmed reports of diminished damage by *Cosmopolites* in the area on Praslin where releases were made in 1953.

Aleurocanthus woglumi :

Citrus Black Fly was not recorded as occurring in Seychelles prior to an identification in 1954, though there is some reason to believe that it has been present for at least a few years. As it occurs on the E. African Coast and in India it was probably introduced on citrus imports. It would appear that neither its insect nor its fungal parasites are present and steps were taken to obtain both, Citrus is no more than a "back-garden" crop in Seychelles but there has been understandable concern at the serious infestation which has occurred in certain areas, causing actual death of some trees and a serious check to many. Home-made kerosene and soap emulsions and proprietary white oil emulsions were recommended and these controlled the pest where spraying was regular.

Cattle fly;

Late in 1953 it became apparent that cattle were suffering loss of condition due to the attack of what has been variously identified *Lyperosia australis* All., *Lyperosia exigua* de Meij., and *Siphona exigua* de Meij. Whatever the name this fly appears to be a fairly recent introduction to the Colony. The assistance of authorities in England and Australia was sought, various improvised control methods being adopted meanwhile. Although some private cattle-owners used sprays of D. D. T. in kerosene it was thought best not to recommend these officially as the risk of D.D.T. secretion in milk could not be overlooked. Wettable D. D. T. was not available in the Colony. Phenol-containing deterrents were effective, and a tick-grease containing B. H. C. was still more so. It was observed that at Union Vale, where manure is heaped daily on one large covered stack, the fly was almost absent — despite infested cattle on neighbouring land — and this seemed to point towards the probable value of covering all manure stacks. This was tried on other Government estates and some lessening in the degree of infestation was noticeable. On private estates — where cattle are often hock-deep in manure and surrounded by heavily soiled land — any programme involving such measures was unlikely to

be successful. Further supplies of the tick-grease were obtained, and sold at a little over cost, while enquiries as to the best long term measures proceeded. Eventually toxaphene was decided upon, and funds were obtained for the purchase of sufficient to supply one Government dip and for the sale of the diluted chemical to stock-owners. The use of toxaphene in diesel oil on back-rubbers was planned. It seems probable that the pest could be exterminated from the Colony and it is planned to do so from one or more small private islands in 1955, as a preliminary measure. One method might be to remove all cattle for the period of the pest's life-cycle and return them after they had been carefully sprayed, but owing to transport difficulties it is more likely that two or three thorough applications of toxaphene to all cattle will be simpler and cheaper. The pest became less troublesome during the wet season.

Rats:

Th tail-bounty was continued as in previous years, payment being the responsibility of the police. Zinc phosphide was on sale to the public by the Department, this poison being generally preferred. Owls were reported from several areas of Mahe, but no pellets for identification of diet were obtained. Anti-coagulant rodenticide was tried in several Government stores and proved effective. An attempt was made to eradicate rats on Long Island (Crown Land) by continuous baiting with a mixture of maize meal and "Sorex" (in an inert filler), no final inspection having been made at the year's end. It would seem that the damage to the coconut crop by rats has either decreased in recent years or was somewhat over-estimated in the past. Damage is easily observed (from fallen rat-gnawed nuts) and is confined to occasional trees on most estates. The worst damage is usually near dwellings and stores and the over-all infestation tends to be over-estimated due to this fact.

5. Unleased Crown Lands.

The Department continued to operate, maintain, or supervise (to a greater or lesser degree according to circumstances) a considerable number and acreage of unleased Crown Lands, scattered throughout the archipelago. Some of these lands it is clearly desirable to retain unleased (such as the higher altitude Crown lands suitable for scheduling as Forest Reserves, lands used for stock and crop improvement work or demonstration, quarantine islands, nature reserves, catchment areas, etc.) but it became increasingly evident that a considerable acreage was unleased for no good reason.

Aldabra and Cosmoledo Atolls and Assumption Island:

These islands, forming the "Aldabra Group", remained under the charge of the Department and were inspected in March by the Director. The labour force was reduced to a bare minimum of 4 under a Manager at Aldabra. Cosmoledo and Assumption remained unoccupied. Owing to the cut in expenses and a policy of collecting turtles and turtle products by chartered vessel and the sale of turtles by auction at Mahe, Government earned a modest profit on the year's work. The Group was offered on lease by tender and by the year's end negotiations were well advanced for lease to a Seychellois planter and businessman and his associates, with part of Aldabra reserved for the establishment of a biological station under the auspices of Commander Cousteau (of "Aqualung" fame). Terms of lease were such as should obviate the

extermination of rare birds and giant tortoises, prevent over-exploitation of turtles, and yet permit reasonable and desirable exploitation and development. Unofficial and misleading communications to the world's press resulted in some 500 applications for information from those desirous of settling in what they had been led to believe were idyllic conditions. Conditions are far from idyllic.

Round Island.

This small islet opposite Victoria was leased to a local businessman and fishing-boat owner, for residence, under terms designed to preserve its attractive tree-covered state.

Unimproved Victoria Crown Lands :

Several house-plots were leased or sold. Some of this land has to be retained for catchment purposes, for future Government housing schemes, and for its amenity value, but apart from cinnamon (which was harvested in 1954) they must remain agriculturally unproductive while unleased owing to the prevalence of praedial larceny.

Mont Fleuri Botanical Gardens.

The lily ponds were cleaned and new canna beds made near them, unsound specimen trees were felled. The garden was kept tidy and colourful within sight of the main drive, providing a pleasant resort for the public. Three labourers' cottages were completed. Approval for a new Manager's house was obtained.

Other gardens and sports-grounds in Victoria.

The Department remained responsible for Government House gardens, Fiennes Esplanade, Gordon Square, and the College and Hospital Grounds. They were kept adequately tidy.

Productive unleased Crown Lands.

The part of Curieuse not occupied by the Leper Settlement continued to be operated profitably as a coconut estate. Care-takers on Long Island, Anse Royale Crown Land, Les Canelles (Mental Hospital), Les Mamelles (Victoria), and Gardener's Estate (Praslin) collected coconuts as usual, despatching to the nearest Government-controlled drier. The areas under the charge of the Forest Officer are referred to in his report. One cottage was built at Gardener's Estate and one on Long Island, and a coconut store on the latter.

Other unleased Crown Lands.

The area of about 4,000 acres operated by "Grand'Anse Estates" is, in fact, unleased Crown Land but is dealt with as a whole in the following paragraphs.

6. Grand'Anse Estates.

A review of the activities of the Estates was included in the 1953 Annual Report and reference was made to the start of discussions on policy. During 1955 it was agreed that the organisation known as Grand'Anse Estates should be abolished from 1.1.55 and that all lands and assets should be treated as other unleased Crown Lands and assets.

Thus, although the Estates continued to operate as a distinct concern during 1954 there was a considerable change in emphasis in preparation for the future. In brief, the following are the directions in which changes were or will be, made :

Grand'Anse Estate.

The coastal area to be developed into a self-supporting stock farm for Government's Sindhi herd and young Sindhi X Friesian stock. The coastal area to include, also, well maintained and manured coconuts, sugarcane, labourers' gardens, and, for the present, the existing cinnamon distillery. Crop trials to be carried out when funds become available. Upper areas to be leased in small-holdings or included in Forest Reserve, according to type of land.

Foret Noire Estate.

To be leased in small-holdings, apart from areas required for inclusion in Forest Reserve.

Anse Boileau Estate.

As above, and a demonstration and instructions smallholding to be operated.

Souvenir Estate.

To be used as a sub-station for Union Vale, apart from areas required for inclusion in Forest Reserve.

Union Vale Estate.

To remain as a Government dairy farm.

Ste. Anne Island.

To be leased for operation by private enterprise.

Anse Louis Settlement :

To remain an Old Peoples' settlement.

(a) *Coconuts and Copra :*

Total Estates' production of nuts and the conversion ratio both showed improvement on 1953. 244.720 tons of copra were produced in 1954 as compared with 220.996 metric tons the previous year, despite an unduly high discrepancy (138,504) between opening and closing nut stocks and a consequent big carry-over to 1955 of unprocessed nuts. The tonnage exported totalled 140.623, 60.370 tons were crushed at the Government Central Expeller, and there was a carry-over of both 1st. and 2nd. grade copra to 1955. The heavy carry-over of nuts was largely due to a combination of circumstances on St. Anne Island, where a record crop and a small drier resulted in arrears. Use of the large ex-C. D. C. fish driers after the close of the year rapidly brought the stock down to normal proportions. These figures include nuts from Mahe Unleased Crown Lands, Long Island, and the 92,294 purchased from tenant smallholders at Anse Boileau.

There was some felling at Union Vale during the year, to make room for more fodder crops. No new areas were planted and there was no in-filling or replacement-planting apart from a few acres at Grand'Anse (Grand Bois Valley). Bush-slashing was continued on St. Anne. Plateau Long at Grand'Anse was dressed with spent cinnamon leaf and disc-harrowed.

During the latter part of the year checks on two Estates revealed a high percentage of 2nd. grade copra, largely the result of delayed collection of nuts, rough handling, over-long storage, and inefficient drying.

<i>Estates</i>	<i>Annual Yield (Nuts)</i>			<i>Average conversion ratio (nuts per ton of copra) 1954.</i>
	<i>1952</i>	<i>1953</i>	<i>1954</i>	
Grand' Anse	359,530	284,393	287,243	5,590
Anse Boileau	651,314	544,685	537,476	6,242
Foret Noire	245,511	196,577	184,340	7,104
Union Vale	80,531	55,049	53,937	Converted at Anse Boileau.
St. Anne Id.	601,550	512,660	653,673	7,454

Notes: Anse Boileau total includes purchases from leased small-holdings.
General average conversion ratio 6,424 nuts per ton of copra.

Disposal of Nuts

Opening stock 1954	48,790	Converted to copra	1,572,103
1954 Estates yield	1,716,669	Sold fresh	42,949
Purchased from Unl.		Ration to workers	5,830
Crown Land	47,800	Bad nuts	4,090
		Livestock feed	993
		Closing stock 1954	187,294
	1,813,259		1,813,259

(b) *Cinnamon*

The distillery at Grand' Anse was working spasmodically during the year, boiler breakdowns being frequent due to injector-pump, valve, fire-bar, flame-tube, and other, troubles. Each breakdown usually resulted in anything up to eight tons of leaf deteriorating in store, with consequent ill-effect on the average oil yield. A large stock of spares was ordered. 384 $\frac{3}{4}$ metric tons of leaf were harvested at piece-work rates on Grand'-Anse, Anse Boileau, and Foret Noire Estates and yielded 2,104.94 kgs of leaf oil. Yield was thus only 5.4 kg. per ton, as compared with a stated 5.9 kg. per ton in 1953. Many improvements and renewals to this large distillery (installed pre-war by a defunct commercial plantation company) are clearly necessary to make it even as efficient as neighbouring small under-fired installations, but it would seem preferable for Government to stop its large-scale commercial-style distillation at the earliest opportunity, since there are now many private distilleries ready to buy leaf. More leaf might have been harvested from the Estates, but a trial sale (by tender) of leaf on the Abondance section of Anse Boileau resulted in the tenderer using piece-workers who would have otherside picked for the Estates and therefore no over-all increase in picking resulted.

31,006 metric tons of dry bark were prepared on the Estates from 60.316 tons of green bark harvested on piece-work.

Leaf and bark at Union Vale was again sold by tender, the tenderer being required to uproot cinnamon where indicated, the aim being to eliminate cinnamon from the Estate except on very steep slopes.

(c) *Sugarcane*

It was a dry year for cane and this combined with the necessary and compulsory uprooting of cane from future food crop land on leasehold smallholdings, reduced the total harvest (inclusive of 60.718 tons purchased from tenants) to 489.507 metric tons compared with the 1953 harvest of 578.236. Cane on eroding slopes was scheduled for abandonment prior to leasing, and the terracing of the land by tenants, as it formed a most undesirable example. Some 2 acres of rich bottom land at Grand' Anse were planted. Disposal was as follows:

Sold to Victoria Bacca Club:	375 tons.
Crushed on Estates:	115 tons.

All cane is used for making the fermented liquor "Bacca", that produced on the Estates being retailed at Estate liquor shops. From August, Estate milling was confined to Anse Boileau.

(d) *Foodcrops* :

As a result of decisions by the Board of Directors the production of crops for human food was reduced, and the first step was to stop all further planting at Grand'Anse Estate, where the land so freed was planted to fodder crops and cane and, on the very sandy "Plateau Cotton", used for grazing. At Foret Noire, production was restricted to sweet potatoes and yams, and existing bananas. At Anse Boileau the customary range (apart from certainly highly uneconomic crops) was grown, but on a somewhat reduced scale. This new policy is linked with the increased production of foodcrops by leasehold smallholders and although the result is likely to be a decreased supply of temperate climate vegetables in Victoria market this will be compensated by an increased tonnage of tropical crops as the holdings get into production.

It was a dry year for foodcrops and the 1954 figures in the following table of production are the result both of the weather and of smaller plantings.

	1952	1953	1954
Tropical roots	47 tons	46½ tons	39 tons
Tropical fruits	82,208 units	104,748 units	66,794 units
Cabbage	15.495 tons	9.061 tons	3.661 tons
Sundry vegetables	38.938 tons	39.901 tons	22.751 tons

Theft of growing crops was prevalent. Cassava, yams, sweet potatoes, bananas, and breadfruit are favoured.

Seasonal gluts of cassava have always tended to occur and in 1954 a start was made with feeding to both pigs and cattle. Peeled and kiln-dried root and also fresh root was used.

As in previous years foodcrops were supplied to Government Institutions, a convent, and the market stall — in that order of priority. Workers on the Estates were usually allowed to purchase what they wished, for their own use.

All produce was sold at fixed prices, often an unsatisfactory method of retail marketing from both the producer's and the consumer's point of view but one which well suits the supply of Government Institutions.

(e) *Fodder Crops :*

The ensilaging of mixed maize and elephant grass was started in 1954, the product being entirely satisfactory. In all, some 125 tons of silage were made. The area of elephant grass at Union Vale was extended with contour-planting. Elephant grass was planted on the "Cimetiere" terraces at Grand'Anse. Increased use was made of sugarcane tops at Grand'Anse.

(f) *Livestock :*

Reference will be found under the heading "Veterinary Work and Livestock" Section II (2).

(g) *Staff Gardens :*

Labourers have been permitted for many years to engage in shifting cultivation on the hill-slopes, growing manioc, sweet potatoes and, occasionally, bananas. As these gardens are scattered over some thousands of acres of coconuts and scrub forest their supervision to ensure soil conservation was impracticable, and there is a record of attempts to enforce efficient contour-ridge cultivation of arable crops having failed. For this reason, and owing to the impending leasing of most of the hill land, it was necessary to give six month's notice of a forthcoming prohibition of gardens other than on level land or, with approved precautions, on sloping land near cottages. Level land was made available to those who asked. At Grand'Anse the whole of Plateau Berlin was divided into rectangular 500 sq. yd. gardens and those workers who made compost heaps were allowed a small free supply of manure as an encouragement. The Director gave prizes and competition was keen. Authority was obtained for the Manager of Grand'Anse Estate to sell produce from his garden, on the understanding that as it is centrally situated it should serve as a public demonstration.

(h) *Estate Works :*

With the future of the Estates in the balance for a considerable part of the year, and later decisions likely to result in extensive leasing, works were confined largely to essential maintenance. The Assistant Manager's house at Anse Boileau was completed, work to limit erosion due to roof-run-off from labourers' cottages was done at Grand'Anse, a terrace marking the lower limit of labourers' gardens at Cimetiere was constructed, new calf-pens were made at Grand'Anse and Union Vale, a start was made with a fuel shed for Grand'Anse distillery, and poultry runs were made at Union Vale. Work started on a Manager's house at Union Vale, to replace an old wooden dwelling.

(i) *Estate staff :*

The departure in June of Mr. Mason (Development Officer) on promotion to Northern Rhodesia was a serious loss and Mr. Serge Savy arrived too late in the year to be able to do much more than begin to

make himself familiar with the Estates. Several members of staff in responsible positions were discharged for dishonesty, or inefficiency, or both, as were a number of labourers. The help of the Principal Auditor and the police was much appreciated and by the year's end indications of dishonesty were somewhat less evident. The weekly bonus of oil (for regular attendance) was abolished towards the end of the year, cash being paid in lieu.

7. Leasehold Smallholdings,

These were referred to in Part II (6) (h) of the 1953 Annual Report as the "Land Settlement Pilot Scheme". No further leasing was done during the year. A number of large estate owners, and others, argued in favour of sale rather than lease but offered no solution to the problems of fragmentation, crippling mortgages, and uncontrolled land-use, which sale presents. The "Deux Arpents" section of Foret Noire Estate (35 acres) was beaconsed for splitting into 5 acre holdings, a start was made with surveying Anse Boileau Estate prior to beaconsing, and authority was obtained to split some 20 acres on Rose Belle Estate (unleased Crown Land, not operated by Grand'Anse Estates). These latter holdings were advertised and thirty applications were received, allocation taking place after the end of the year.

All seven holdings at Anse Boileau were inspected regularly and, apart from the produce (milk, honey, livestock, home-processed goods such as biscuits &c.), which smallholders were allowed to market independently, detailed and accurate records were kept of all production for sale. Six of the holdings had sugarcane on them (on eroding slopes) when allocated in 1953, and, after due notice, tenants were required to uproot this to permit terracing, fodder crops, or bananas on the land. Sugarcane will again be permitted when adequate progress has been made with other work.

During the year it became clear that with adequate livestock and composting a modest living can be obtained from 5 acres, or even less where soil and water conditions are particularly good. Future leases will be based on this finding. On the 10 acre plots in occupation the leaseholders were all employing outside labour, some using as many as two men and two women. There is of course no objection to labour-employment but with a limited area of Crown Land available and a heavy demand for leasehold smallholdings it would seem preferable to aim at a size which can be operated by the family.

The marketing of smallholder's produce by Grand'Anse Estates has provided an invaluable check on the economics of the holdings, but would be an intolerable and unnecessary burden on Government as the number of holdings increases. Coconuts and (when grown) patchouli can be sold through normal channels, as can foodcrops, and it is only if the Department introduces to the smallholders an export crop which lacks an established outlet that Government buying may be required as a temporary measure. The needs of Government Institutions, and the Union Vale dairy herd, can be met by entering into contracts with smallholders for the supply of vegetables and rootcrops.

Application was made for funds under C. D. & W. to permit the engagement of a "Settlement Officer" in 1956, and to permit crop trials and the establishment of a demonstration and instructional holding.

A policy of leasing land without housing, and without loaned cattle or compulsory produce marketing arrangements, will be tested in 1955, as will a rental of 4% of the estimated value of the land and an arrangement whereby terracing will result in cash compensation month by month as the work proceeds.

One smallholder appeared to be mentally unsuited to the life, but consideration of termination of tenancy was postponed. Others seemed well suited.

The following table shows average monthly production for sale (through Grand Anse Estates) in 1954, average monthly-cash income therefrom, and average area bench-terraced each month since first occupation.

<i>Plots No.</i>	<i>Coconuts (units)</i>	<i>Sugarcane Kgs.</i>	<i>Roots & other Vegetables Kgs.</i>	<i>Cash Income Rs.</i>	<i>Sq. Yds. of terracing</i>
1	1,081	563	245	176.76	61
2	663	672	309	145.00	56
3	1,167	309	197	176.39	58
4	912	2,015	368	221.43	71
5	1,102	1,699	256	222.81	50
6	907	1,146	134	161.58	51
7	1,850	—	338	238.22	See note.

Note : Plot 7 is of 5 acres, on nearly level land. Tennant carried out extensive and successful drainage of a marsh for food crops. All other plots are of 10 acres.

8. Central Oil Expeller.

This plant, which was erected in 1952, operated on 172 days during the year, as compared with 121 days in 1953. The number of working hours per day averaged 5.5, compared with 7.1 in 1953, the difference being due to the smaller individual lots brought for milling in 1954 and the consequent interruptions. Crushing rate improved, however — averaging 183 kg. per hour in 1954 as compared with 145 kg. per hour in 1953. A total of 174.296 tons of copra were crushed during the year, as compared with 125.296 tons in 1953. The average oil expression per cent copra was 58.3 compared with 58.8 the previous year, pressing in all cases being once only.

At a service charge of Rs. 45 per ton operation was at a loss even neglecting amortization and depreciation and over-all management costs.

In Section I (A) (1) reference is made to copra milling in the Colony. The Central Expeller was put on a care and maintenance basis at the end of the year, it being cheaper to pay a commercial miller to process Government copra (chiefly for obtaining the poonac) than to start up the Central Expeller a few days a month for the purpose.

9. Central Distillery.

The Central Distillery received no requests for distillation during the first half-year, and was put on a care-and-maintenance basis from July. Little patchouli is distilled in the Colony now, overseas buyers preferring dry leaf, and it was for this work that the Distillery was largely used in the past. The Central Distillery was offered for sale.

10. Trials, Extension Work and Sundry Services.

The only simple trials which were undertaken have been referred to in the Forester's report and in the report on pests, diseases, and vermin.

The senior staff gave advice to planters and others on request and the activities at Union Vale and Grand'Anse formed, in many cases, useful demonstrations to the public. A scheme was started whereby anyone who wished to carry out bench-terracing was given a free layout (by Abney level or road-tracer) and the free loan of heavy tools and terrace-boards, and there was a small but nearly constant demand throughout the year. "Agricultural Notes" were started in the "Bulletin" in July. No difficulty was found in filling a column or two each month for the rest of the year, and in a Colony as isolated as this such technical (and topical) reading matter is thought to be appreciated by many. The "Notes" were broadcast by Radio Seychelles. The most scope for field extension work is among the leasehold smallholders of Government, ways and means on many coconut estates having settled into a more or less unalterable pattern.

Among the services offered by the Department were:

Veterinary treatment, drugs, and sundries; stud bulls; a milk supply in Victoria; Sindhi and Sindhi X Friesian heifers and bull calves at auction; Large White and crossbred piglets at auction; Rhode Island and Rhode Island X Gallega hatching eggs (retail) and pullets and cockerels (at auction); Distilling and copra milling (later discontinued); tested imported temperate-climate vegetables seeds at cost; sulphate of ammonia, muriate of potash, lead arsenate, metaldehyde, paradichlorobenzene, zinc phosphide, &c. at cost plus a small percentage; ornamental and economic plants raised to order; sprouted yam cuttings to order; laboratory analyses; inspection and certification; Melittomma control in Praslin &c.

The facilities offered by the Commonwealth Agricultural Bureaux were widely used and greatly appreciated in dealing with advisory problems.

A major aim of the Department is to so reduce direct production that trials, demonstration, advisory work, and services can be engaged in more widely. Approval was obtained for the engagement in 1955 of a field Instructor to undertake demonstrations of Melittomma control in Mahe, Cerf, and private islands. This will be the first and only officer of the Department (or Grand'Anse) to be specifically engaged in instruction or demonstration.

11. Victoria Bacca Clubs

These liquor shops, making and retailing fermented sugarcane juice for consumption on or off the premises, were operated on an Advance Account by an appointed Committee and a paid Secretary-Manager until April 1954. Government then decided to include them in the estimates of the Department, the Committee becoming advisory to it. Later it was decided to transfer control to the Labour and Welfare Department, this becoming effective after the end of the year.

The following is a record of production and sale in 1954.

Cane purchased from the public	47.699 tons
Cane purchased from Grand'Anse Estates	375.290 "
Total cane purchased	422.989 tons
Total yield of juice	301,858 bottles
Loss in fermentation and sediments	6,734 "
Available for sale	294,924 bottles

Actual sales of fresh juice and fermented liquor: 294,060 bottles, according to cash receipts paid in (Rs. 73,515). Spoilt liquor was sold as vinegar.

The cane was bought at Rs. 40 per ton at roadside, and most was hauled by Bacea Club lorry from the Grand'Anse area, in two-ton lots. Milling was by small motor-driven mill and fermentation by "wild" yeasts. Bagasse was given away. A moderate degree of rationing of consumers was enforced. The premises (one principal one and two very much smaller) were open between 4 and 6 p.m. on weekdays.

SECTION III — LEGISLATION.

One Ordinance relating to matters with which the Department is concerned was passed in 1954, the *Fisheries (Amendment) Ordinance 1954*. This Ordinance (the coming into effect of which awaits preparation and approval of Regulations) makes the majority of the provisions designed to conserve non-migratory fish enforceable by Regulation, the provisions having previously formed part of the Ordinance.

A Defence Regulation prohibiting the slaughter of cattle except on permit was repealed. This Regulation had been made at a time when there was a heavy demand for meat and when it was feared that indiscriminate slaughter might reduce the cattle population to an undesirable extent.

SECTION IV — STAFF AND GENERAL

1. Staff.

Mr. A. Jefferiss B. Sc. Hort. continued as Director, assisted by Mr. E. F. Brewer, Mr. J. F. G. Lionnet, Mr. Donald Morgan, Mr. E. de S. Mason (until June), and a somewhat depleted staff of Agricultural Assistants, Managers and others. Mr. Brewer was on overseas leave during the greater part of the year, Mr. Dubuisson (Senior Forest Ranger) assuming many of his responsibilities. The best wishes of the Department go with Mr. Mason on the occasion of his appointment to Northern Rhodesia in H.M. Colonial Agricultural Service, his energy and enthusiasm being sorely missed by his former colleagues. Mr. Barry Alton remained Chief Clerk until September, when he was spirited away almost overnight owing to a staff crisis in another Department. The transfer to us of Mr. Laye-Sion as Chief Clerk helped to soften the blow.

Late in the year Mr. Serge Savy B. Sc. Agric. joined us as Agricultural Officer. It is an important event to have with us a Seychellois graduate. He was posted to Grand'Anse, where he soon found ways and means of helping the Manager to improve our animal husbandry.

2. General.

One meeting of the Agricultural Board and one of the Fisheries Board were held during the year, lively discussions and a number of resolutions resulting. The assistance of the Boards was invaluable. Visitors to the Colony included Commander Cousteau, Prof. Smith (of coelocanth fame) and a number of vacationing or retired planters and farmers. Many of these inspected the Department's work and much useful discussion resulted.

In a year of change and staff shortage I wish to record my appreciation of the loyalty and enthusiasm of the staff under my control at the close of the year and for the helpful attitude of so many estate owners, merchants, officials, and others.

A. Jefferiss,
Director of Agriculture.

